

CLAVAGELLA MINIMA, sp. nov. (Pl. XXV. figs. 21, 22.)

Testa parva, alba; tuba longitudinaliter compressa, apertura leviter reflexa, haud fimbriata; valva dextra lata, planulata, extus concentricè irregulariter rugata, intus argentea, margo dorsalis fere rectus, ventralis valde arcuatus.

Valvæ, umbonis marg. 7, antero-post. 10 millim.

Hab. Mauritius (*V. de Robillard*).

This small Mauritian species is certainly distinct from the Maltese *C. aperta*, but it is impossible to say whether the specimens are full-grown or not. I have seen four specimens differing but little in size, two of which are in the National Collection at South Kensington.

DESCRIPTION OF PLATE XXV.

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| Fig. 1, 2. <i>Ovulum Haynesi</i> , p. 397. | Fig. 16, 17. <i>Cochlostyla Gloynei</i> ,
p. 398. |
| 3. <i>Oliva Bülowi</i> , p. 395. | 18. <i>Orthalicus MacAndrewi</i> ,
p. 398. |
| 4, 5. <i>Mitra formosensis</i> , p. 395. | 19. <i>Crassatella japonica</i> ,
p. 399. |
| 6. — <i>Smithi</i> , p. 396. | 20. <i>Pectunculus crebreliratus</i> , p. 399. |
| 7. — <i>recurva</i> , p. 396. | 21, 22. <i>Clavagella minima</i> ,
p. 400. |
| 8, 9. <i>Trochus baccatus</i> , p. 397. | |
| 10, 11. <i>Thalotia Wilkiei</i> , p. 397. | |
| 12, 13. <i>Amathina imbricata</i> ,
p. 398. | |
| 14, 15. <i>Pleurotoma Brionæ</i> , p. 395. | |

On some unrecorded Parasitic Acari found in Great Britain.

By A. D. MICHAEL, F.L.S., F.Z.S., F.R.M.S.

[Read 7th February, 1889.]

(PLATE XXVI.)

I SPENT the summer of 1888 in Derbyshire, near Chatsworth: the cold and wet season, however, rendered ordinary open-air collecting very fruitless; I therefore took the opportunity of obtaining all the wild mammals which I could obtain alive, or immediately after death, with a view to see whether I could find any unknown forms of parasitic *Acari*. My search was rewarded by finding the three species recorded in this paper, which, I believe, were not previously known. The *Myocoptes* adds another to this curious genus, which was founded by Claparède, and of which there was only one species known previously; both are parasites of the mouse and rat tribe; they are strictly ecto-

parasitic, living among the hairs, and they are furnished with the most remarkable apparatus for holding these hairs, to which the females of the present species cling so tenaciously that the grasp is often not relaxed even in death. The species now described is very much smaller than that previously known.

The second species is a *Symbiotes*, one of the Sarcoptidæ, and is a parasite of the hedgehog. I regret that I was not able to find the male of this species; but I only had one hedgehog, the parasites were extremely few upon it, and these few were most difficult to catch, running up and down the quills of the hedgehog and about between them with great rapidity.

The third species, which is very minute, does not appear to fit satisfactorily into any known genus; I have therefore been forced to institute a genus, "*Goniomerus*," for it; the species will of course serve as a type for the genus; it would be too soon to attempt to define the latter accurately in any other manner, particularly as the present species is so extremely minute as to render detailed observations of it most difficult.

MYOCOPTES TENAX, n. sp. (Pl. XXVI. figs. 1-7.)

	Male.	Female.
	mm.	mm.
Length about	·15	·20 to ·27
Breadth about	·11	·10
Length of 1st and 2nd legs, without the claws, about	·06	·06
Length of claw of 2nd leg	·03	·02
Length of 3rd leg, without claw	·04	·04
Length of claw of 3rd leg	·03	·02

The colour and texture in both sexes is very similar to that of the only other known species of the genus, viz. *M. musculus*, except as mentioned below.

Male.—Diamond-shaped, the division between the cephalothorax and abdomen well marked by a nearly straight transverse line, the body being slightly constricted at this point. Outline of cephalothorax slightly and irregularly undulated; that of the abdomen on each side convex anteriorly, then concave, and again convex posteriorly. The abdomen is not divided posteriorly into two pointed projections as in *M. musculus*, but comes to a single central bluntish point. On each side of this point is a square projection, from each of the two outer corners of which springs a very long and powerful hair. Thus there are two pairs of these

hairs instead of one pair, as in *M. musculus*. These hairs are nearly as long as the whole length of the body; both pairs curve upwards at first, and then run backward and outward; but the pair near the centre are much the straighter. There are two other much smaller hairs springing from each of the square projections. There are two large hairs on each side of the body, one a little in front of, and one a little behind, the constriction between cephalothorax and abdomen; the hinder is considerably the larger. There is a pair of large hairs on the dorsum of the cephalothorax, and several smaller pairs on that of the abdomen. The claws of the first two pairs of legs are extremely long, very slightly curved, and rod-like. The legs of the fourth pair, although of the same general form as in *M. musculus*, are very much smaller in proportion, they do not project behind the body, and are scarcely thicker than those of the first and second pairs; they are much shorter and narrower than those of the third pair, which extend considerably further back than the body. Each tarsus of the fourth pair bears a long flexible hair and a short stout spike still nearer to the tip. On the inside of the flattened claw of each third leg, at the proximal end of the claw, is a curved chitinous process projecting inward, and a similar process is found on the preceding joint. There are several pairs of long hairs on the ventral surface, and a pair of stout spines behind the penis.

The Female.—The female differs from *M. musculus* more than the male does. The abdomen of the present species is almost cylindrical, although somewhat flattened dorso-ventrally; it is slightly smaller at the ends than in the middle, but is without the highly flattened form and the lateral angular projections found in the other species. The whole abdomen is covered by strong, slightly irregular transverse wrinkles or ridges; these are slightly rough, but are not set with the well-marked and regular points found on those of the female of *M. musculus*. The length of the abdomen varies greatly in different specimens, or more probably in the same specimens at different times: there is usually one egg matured at a time, and as it is very long, it probably elongates the extensile abdomen as it grows, and other circumstances will probably produce temporary variations in the length of the abdomen. The variation in the length of the female noticed in the measurements arises almost entirely from the abdomen. The creature usually holds the hair of the mouse with the third and fourth claws, and keeps the rostrum sharply inclined down-

ward, while the abdomen is somewhat raised; thus the creature has the appearance of possessing caput, thorax, and abdomen. The abdomen has two very long hairs at its hinder end, and there are two smaller, but still large, hairs on the lateral edge between the second and third legs; and two on the cephalothorax, as in the other species, besides two sparse longitudinal rows of smaller hairs on both divisions of the body. The first and second legs are like those of the male, but the claws are shorter. The third and fourth legs resemble the third pair of the male, but the claws again are shorter, but, on the other hand, they are broader. These great holding-claws in this species are much wider in proportion than those of *M. musculus*; indeed, their breadth is very remarkable. On the ventral surface the epimera of the first pair of legs join in the median line and are prolonged by a short sternum (so-called); those of the second pair of legs are forked at their distal ends. Posterior to these, and almost touching those of the third pair, are two conspicuous chitinous pieces of rather more than half-a-circle shape with their outer corners slightly prolonged; the chitinous pieces protect the vulva, which lies between the third and fourth pairs of legs.

The Nymph.—The nymph is very similar in form to the male, but without the square posterior projections; there is only one pair of large hairs posteriorly. The fourth pair of legs are similar to the third, as in the female. The constriction between cephalothorax and abdomen is very marked. Neither pair of legs are nearly so long as the third pair of the male.

The Larva.—Almost diamond-shaped; of course there are not any fourth legs, but the third pair are placed near the posterior end of the body, giving a very singular appearance. Otherwise the larva resembles the nymph. Both differ considerably from those of *M. musculus*.

Habitat. Parasitic upon the field-vole (*Arvicola agrestis*).

SYMBIOTES TRIPILIS, n. sp. (Pl. XXVI. fig. 8.)	Female.
	mm.
Length about	·33
Breadth about	·26
Length of legs: 1st and 2nd pairs about	·15
3rd pair about	·06
4th pair about	·03
Length of longest hair on 3rd tarsus about	·70
" " on hind margin of body about	·40

This species is closely allied to the *Chorioptes setiferus*, var. *hyenæ* of Mégnin; there are, however, well-marked specific differences.

I have adopted Gerlach's name of *Symbiotes* for the genus in preference to Gervais's name of *Chorioptes*, which Mégnin has employed, because Gerlach's is the earlier, and Mégnin appears to have used *Chorioptes* under a misapprehension. Mégnin says that Gerlach's name has priority, but he says that it fails because Redtenbacher had already called a genus of Coleoptera by that title; this, however, seems to be an error. Gerlach's name was published in his monograph in 1857, whereas Redtenbacher's genus was in his 'Fauna Austriæ' in 1858; it is therefore the latter genus which fails, not Gerlach's.

I have, unfortunately, not been able to obtain the adult male.

Female.—Body irregularly pentagonal, broadly truncated posteriorly; considerably wider anteriorly than posteriorly; anus projecting from the hind margin. Body almost white, semitransparent; rostrum, epimera, and legs strongly chitinized and brown. First and second pairs of legs thick and strong; the tarsus of each of these legs has a strong hair or rod springing from its upper surface in the median line; this hair is of almost equal thickness throughout, and ends quite bluntly, it stands upward and is considerably longer than the tarsus. These tarsi are terminated, as usual, by suckers. The epimera of these two legs nearly join at their posterior ends. The third pair of legs are much smaller, not above half the length; they are terminated by three very long hairs of unequal lengths, the longest is more than twice the length of the body. The fourth legs resemble the third, but are so small as to appear quite rudimentary; they are not above half the length of the third pair, they also are terminated by three long hairs, but these are small and short compared with those on the third pair. The body bears two pairs of very long hairs on the hind margin, the outer hair of each pair is considerably longer than the inner, the outer hair is longer than the body. The vulva is a rounded median depression, towards which the striæ of the skin run from all sides, as in *S. setiferus*.

The Nymph.—Resembles the adult female, but, of course, is smaller and less chitinized.

Habitat. I found the species upon the hedgehog (*Erinaceus europæus*). It is very active, running up and down the spines of the hedgehog with great rapidity.

GONIOMERUS* MUSCULINUS, nov. gen. et sp. (Pl. XXVI. fig. 9.)

	mm.
Length about	·155
Breadth about	·105
Length of legs (all pairs) about	·035

Colour.—Semitransparent white.

Texture.—Much that of the ordinary Sarcoptidæ, *i. e.* smooth and leathery, not polished. The skin is marked more or less with excessively fine wrinkles or striations, so fine that they are very difficult to see.

Form &c.—Body almost oblong, but somewhat narrower posteriorly than anteriorly; there is not any clear demarcation between cephalothorax and abdomen. The rostrum projects, but is bluntish; a pair of mandibles may sometimes be seen projecting from the mouth-opening. The rostrum bears a pair of fine hairs. The body is much compressed dorso-ventrally, and is divided into four lobes on each side, the hind lobe showing a slight tendency to be bifid. On the posterior margin there is a slight indentation above the anus, which is almost terminal, but slightly on the ventral surface. From the hind margin spring a pair of long hairs directed backward, they are fully two thirds of the length of the body; immediately below them are another pair of similar hairs proceeding from lobes on the ventral surface; as this under pair is entirely concealed by the upper pair, when viewed from above, it is not shown in the figure. The legs are short, and are the great peculiarity of the creature; they are all alike and all directed forward, the fourth pair usually more so than is shown in the figure, where they are spread out. They consist of five joints; the femur is very large and singular in shape, it projects beyond the body and bends suddenly at rather less than a right angle, so as to form an advancing corner which completely alters the direction of the leg. The more distal joints become gradually smaller; the tarsus is terminated by a small claw, smaller in proportion than can be shown in a drawing the size of fig. 9, and there is another small chitinous projection close to it which may be regarded as a mere peg or a second claw; I am inclined to look on it in the former light. There are hairs on the underside of each joint of the leg and one or more on the upperside of

* γωνία, an angle; μηρός, the thigh.

each tarsus, besides a few others. The penis is placed on the ventral surface in the median line between the hinder part of the coxæ of the third legs; the vulva between those of the second legs.

I found the creature on the surface of, or very slightly buried in, a depression of the skin lining the inner side of the external ear of the short-tailed field-vole (*Arvicola agrestis*). I believe it to be unrecorded, and propose to call it "*Goniomerus musculus*."

DESCRIPTION OF PLATE XXVI.

- Fig. 1. *Myocoptes tenax*, ♀. Dorsal aspect. × 175. Drawn from a specimen with long abdomen.
2. " " " Ventral aspect. × 175. Drawn from a specimen with short abdomen.
3. " " " From the side. × 175. Natural position, holding the hairs of the mouse.
4. " " ♂. Dorsal aspect. × 175.
5. " " " Ventral aspect. × 175.
6. " " nymph. Dorsal aspect.
7. " " ♀. 3rd leg, seen from the inner side. × 350.
8. *Symbiotes tripilis*, ♀. Ventral aspect. × 130.
9. *Goniomerus musculus*, ♂. Dorsal aspect. × 175. (There is another pair of long hairs on the hind margin, below and hidden by the pair shown.)

On the Structure of the Retina of the Blowfly (*Calliphora erythrocephala*). By BENJAMIN THOMPSON LOWNE, F.R.C.S., F.L.S., Hunterian Professor of Comparative Anatomy in the Royal College of Surgeons.

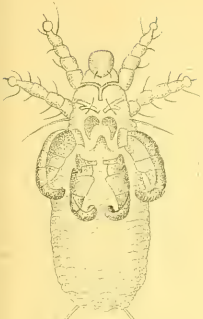
[Read 21st February, 1889.]

(PLATE XXVII.)

IN 1884 I had the honour of reading a paper before this Society on the compound vision and morphology of the eye in insects, which was published in the second volume of the new series of 'Transactions.'

That paper received at the time much adverse criticism, and Dr. Hickson published a memoir in the 'Quarterly Journal of Microscopical Science,' in which he convinced himself that he had completely refuted my observations.

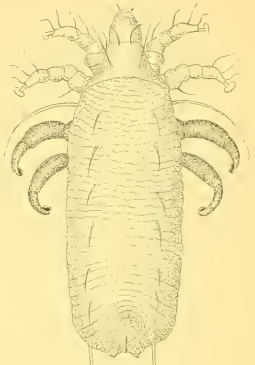
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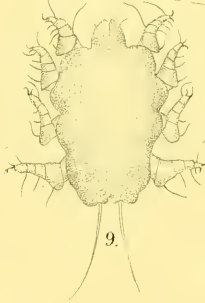
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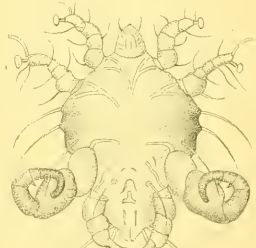
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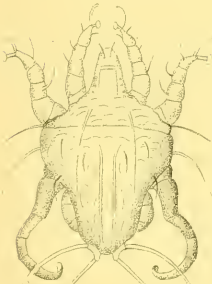
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